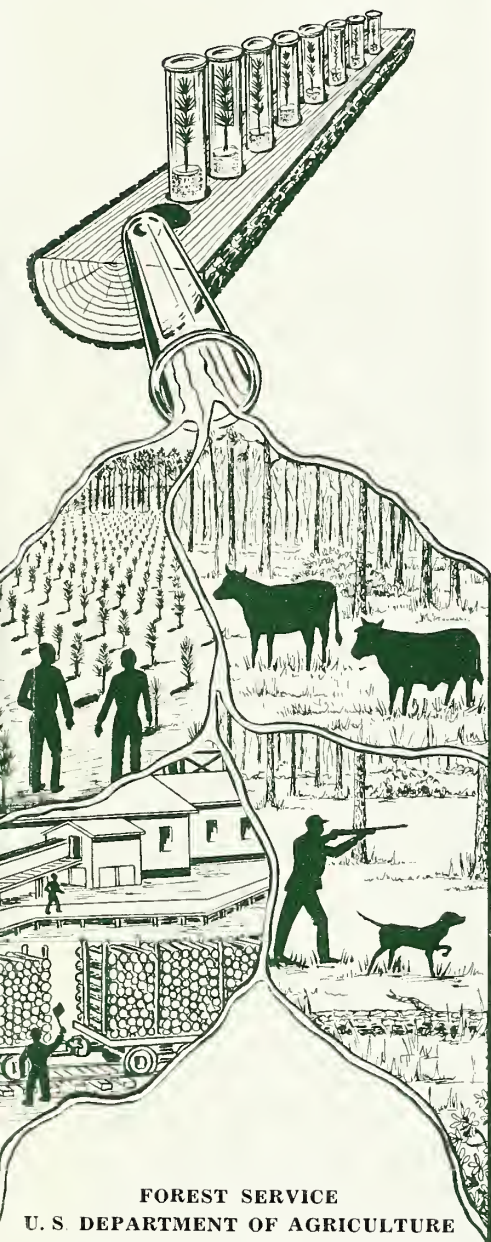


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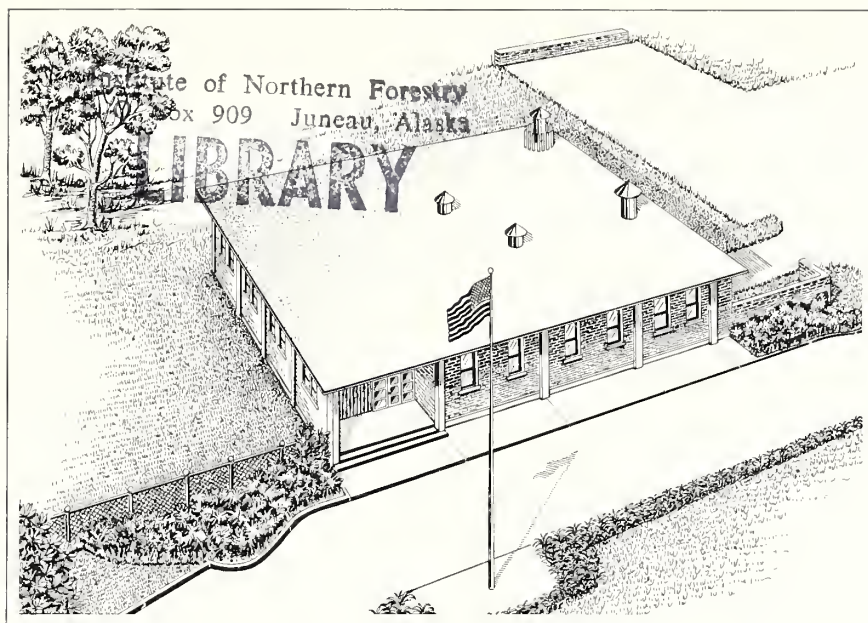
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FLASDV A36 RESEARCH *News* FOR THE MIDSOUTH



FOREST SERVICE
U. S. DEPARTMENT OF AGRICULTURE
Southern Forest Experiment Station
T-10210 Federal Building
701 Loyola Avenue
New Orleans, Louisiana 70113

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Forest Tree Seed Laboratory to be Dedicated

A new Forest Tree Seed Laboratory, major effort of USDA's Forest Service in fundamental seed research in the eastern half of the United States, will be dedicated at State College, Mississippi, April 19.

The Honorable John Stennis, U. S. Senator from Mississippi, will be the principal speaker, according to Dr. Thomas C. Nelson, Director of the Southern Forest Experiment Station. The laboratory is one of the Southern Station's 12 research installations in the Midsouth.

Several hundred thousand pounds of tree seeds are already used annually to reforest timber lands in the South, Dr. Nelson said, and the amount can be expected to rise sharply as demand for forest products increases. To help increase the supply of high-quality seed, the Forest Tree Seed Laboratory, activated in the fall of 1966, studies problems of seed collection, storage, extraction, and germination. Sci-

entists at the laboratory are concentrating first on hardwoods, but their interest extends to seeds of all eastern forest tree species.

Early research suggests that artificial ripening of prematurely picked sweetgum fruits is possible. This means that fewer people can collect seeds over a longer period of time, avoiding loss of ripe seeds dispersed by the wind.

Research on methods for long-term storage has been started with seed of water tupelo and several species of oaks. With improved storage techniques, seed from a bountiful crop could be saved for use in years of scarcity.

Seed often becomes dormant—that is, it remains alive but unable to germinate quickly when sown. On forest sites, slow germination lengthens the time seed lies on the ground as food

See Lab, Page 5

Springtime Is Termite Time

Termites needn't cause householders to lose sleep. They can be stopped. Better yet, prevented.

Simple and inexpensive steps can be taken to prevent attacks. Yet termite damage yearly costs U. S. householders almost half a billion dollars, besides the trauma of discovering that the family home is being eaten from within.



Termite worker—the form that occurs in the greatest number in colonies.

Soil treatment is a good way to keep out the intruders. Here's why. The termites that do the most damage live in the ground because that's where they find the moisture they need—hence their name, subterranean. They go out from their nest to forage for food, dining on delectable door frames and succulent studs, but returning to the ground for moisture and to take food to other members of the colony. Disrupt these travels and you keep out termites. A good way to accomplish the disruption is to apply chemicals to the soil through which the insects travel from nest to feeding place. They will not get into a house if soil under it and around the foundation is effectively treated with chemicals.

Southern Forest Experiment Station researchers at Gulfport, Mississippi, have found treatment of the soil with chlordane 100 percent effective after being tested out of doors for 20 years.

The Federal Housing Administration and other Government and State agencies recommend 1.0 percent chlordane in water emulsion, and aldrin, dieldrin, and heptachlor at 0.5 percent in water emulsion. Aldrin and dieldrin have been tested for 19 years and are still effective. Heptachlor, tested for 16 years, also remains effective. Studies are continuing to determine just how long these four insecticides do provide protection. Emulsion is preferred to oil solution because it is cheaper and doesn't affect plantings around the house or damage vapor barriers.

Builders Should Take Care

Owners and builders of new houses are urged to make very sure that the right chemicals are properly applied to the soil before the slab is poured, or that the ground around raised foundations is properly treated. The chemicals are sold as concentrated solutions and can be diluted with water.

Professional pest control operators can offer expert services, or the homeowner can do the job himself if he is careful to observe safety precautions. The chemicals should not come in contact with the skin, and adequate ventilation should be provided.

A few precautions in building or maintaining a house will reduce the number of entry points.

Wood should be kept out of contact with the ground. Blooming flowers and shrubs provide beauty, but if the soil around them is heaped up against the foundation almost to floor level, it provides an avenue of entry for hungry travellers. In raised houses, sills and beams should be at least 12 inches above the ground. Solid concrete makes the best foundations, but well-pointed brick is satisfactory. Hollow blocks should not be used unless they are capped with a minimum of 4 inches of reinforced poured concrete.



Mud tubes over a foundation are signs of termite entrance into a building.

What if termites appear? Spring is the time of year when they are most likely to fly. A swarm flying indoors probably means termites are there. Mud tubes over a foundation are another sign of entry. But no need for panic! A house that gets them doesn't have to keep them. The same chemicals that prevent termites will effectively halt infestations.



Severe domoge in this 5-year-old house could have been prevented by properly treating the soil around the foundation with on insecticide.

The Formosan subterranean termite, Asian cousin to the native termite, showed up in Houston, Texas, in 1965 and more recently in several other coastal cities. He is bigger and hungrier than the native breeds, but can be controlled by the same chemicals.

While chemical controls have proved effective for many years, it would be desirable to find biological or other means of coping with the termite problem.

Attract or Repel?

Why do termites feed on what they do? That question has Gulfport entomologists involved in studies that reveal the tiny house wrecker to be a pretty complex critter.

Apparently termites can lay down odor trails, much the way ants do. When foraging worker

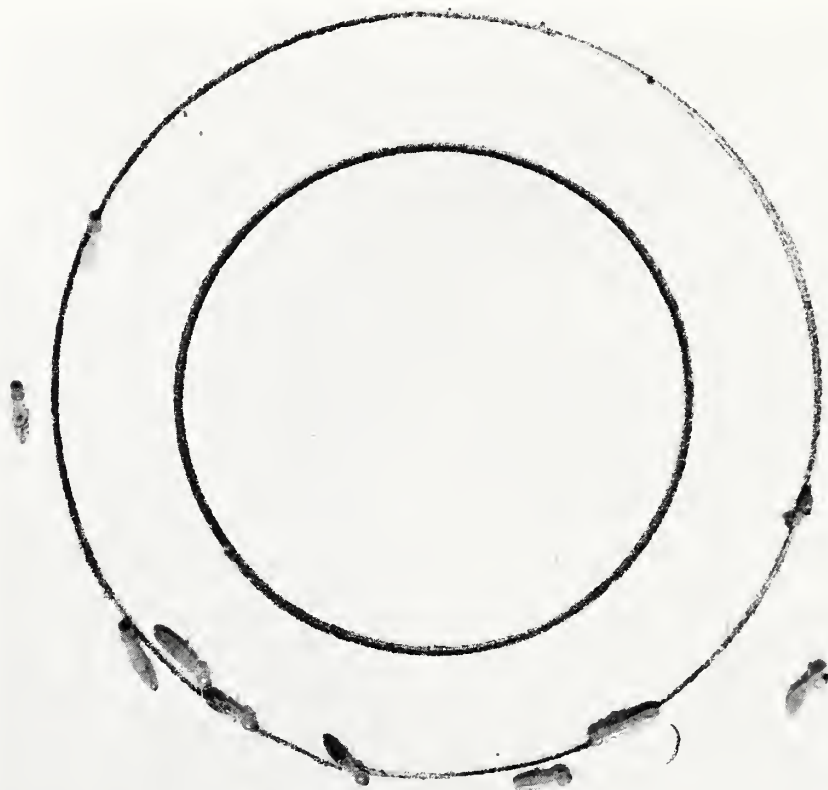
termites return to the nest after locating food, they can lay down a substance to show the way to others.

Researchers now know what the substance is. University of Wisconsin scientists, supported in part by the Southern Forest Experiment Station, have isolated, identified, and synthesized the material. The native species of termites make their odor trails with a substance that appears to be very similar, and possibly identical, to an attractant compound produced in western white pine decayed by the fungus *Lenzites trabea*. This discovery will lead to further testing. How do the attractants af-

fect termites? Orientation—to bring them to a food source? Stimulation—to make them eat more? Maybe one, maybe both.

Sound woods have qualities that attract or repel termites. The same qualities that attract in sound wood may repel when decay sets in.

Termites cannot digest the food they eat but rely on protozoans in their digestive tracts to do it for them. Without the protozoans, termites cannot live. If forest scientists can develop a wood treatment to affect the protozoans, they will be on the way to a new means of getting rid of termites by starving them to death.



Termites opporently loy down odor troils, showing the way to others, when they return to the nest offer foroging for food. In photo above, ottroctont was placed on outside circle. Termites were placed in the center. They crossed the inside circle where there was no ottroctont ond gothered along the outside one.



Fruit and scale-like leaves on twig of mature redcedar.

The magnificent stands of redcedar often described by early explorers have been cut. For a number of years eastern redcedar has been primarily confined to fence rows, abandoned fields, and submarginal lands, where it often grows poorly. Any good reasons to do something about it?

Management of the species should be encouraged on small farms, Southern Forest Experiment Station scientists believe. These conifers generally occupy sites too rough or rocky for field crops, and salable products are small enough to be handled with ordinary farm equipment.

Redcedar fence posts are superior and in good demand, and redcedar lumber is highly prized for chests and closet lining. The species ranks among the top five for Christmas trees, and is important in shelterbelt plantings on the Great Plains. In addition, it has considerable value to wildlife. Its fruits are eaten by birds, rabbits, foxes, raccoons, skunks, and coyotes. The foliage

Small Trees for Small Farms

often carries deer through winters when more desirable plants are in short supply.

Mature trees are small to medium in size—usually 40 to 50 feet tall and 12 to 24 inches in diameter. On good sites they may reach 120 feet tall and 4 feet in diameter.

Small landowners should find redcedar relatively easy to manage. It readily reseeds itself and can be planted without difficulty where seed trees are not around. Thinning encourages growth.

Insects do not seriously damage eastern redcedar. The trees are susceptible to a disease

known as cedar-apple rust, which is a serious hazard to apple trees but seldom does much damage to redcedar.

A compendium of published material on the species, supplemented by up-to-date research results from northern Arkansas, has recently been completed by four Southern Forest Experiment Station researchers. It describes natural regeneration problems, planting and seeding techniques, methods of controlling competition, management practices, and marketing prospects. Copies are available from Southern Station headquarters in New Orleans.



An aggressive pioneer species, eastern redcedar invades old fields and pastures.

for birds or animals. In nursery beds, dormant seed produces uneven stands. An understanding of the causes of dormancy may lead to effective ways of breaking it, Dr. Nelson said.

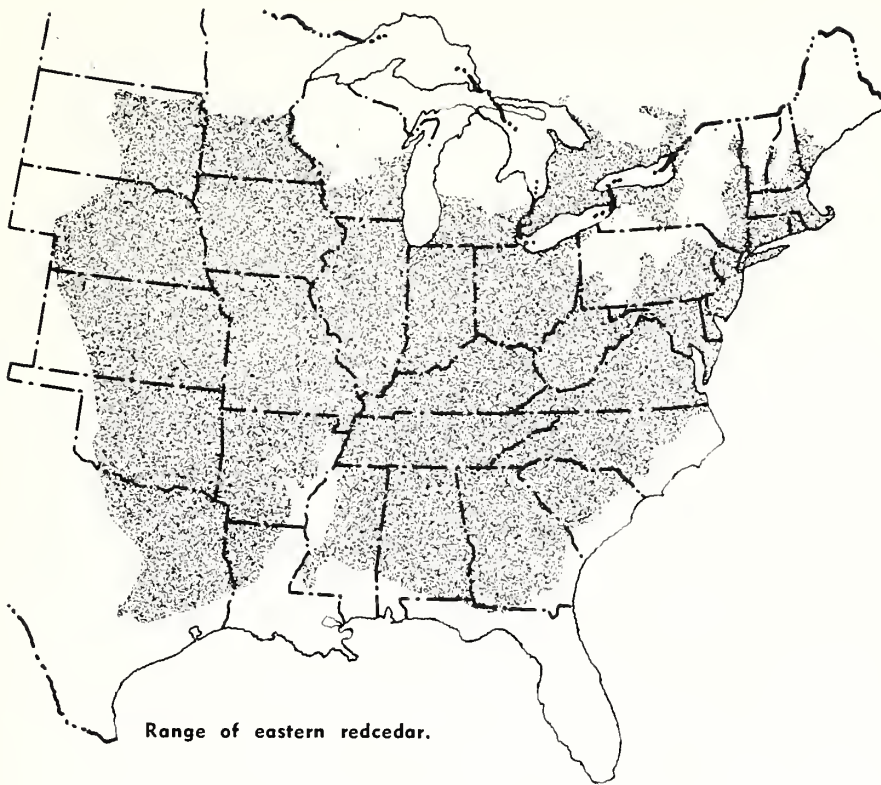
Pines have been successfully planted and seeded for a number of years, and reasonably reliable methods of handling their seeds are available. But substantial improvements are needed to meet future needs. Knowledge about handling and use of hardwood seeds is much less advanced.

Located on a 7-acre site at the southwest corner of the Mississippi State University campus, the new laboratory has facilities for five scientists and supporting personnel. Dr. F. T. Bonner is Project Leader.

A. W. Greeley, Associate Chief of the U. S. Forest Service, Washington, D. C., will declare the facility officially open. Dr. Nelson will be master of ceremonies for the program, which is scheduled for 10 a.m. in Dorman Hall Auditorium.

In addition to Senator Stennis, speakers will include Dr. Louis N. Wise, vice-president, Forestry and Agriculture, Mississippi State University; John W. Squires, forestry consultant, International Paper Company; William W. May, forestry agent, Illinois Central Railroad; and Dr. William L. Giles, president, Mississippi State University. The Reverend Prentiss M. Gordon, pastor of the First United Methodist Church, Starkville, will give the invocation.

The public is invited to the program, which will be followed by an open house at the new laboratory.



Range of eastern redcedar.

Hydrology Laboratory Wins Award

The Southern Forest Experiment Station's new Forest Hydrology Laboratory at Oxford, Mississippi, has been named one of the outstanding public buildings constructed in the United States during this decade.

Dedicated October 24, 1968,

the building was described in the November issue of "Forest Research News for the Mid-south." It will be featured in a 56-page illustrated volume showing the history of the General Services Administration's building program since 1959.





What's in a tree?

The volume of wood in a standing tree stem is usually found by measuring the tree's height and diameter, and then referring to a volume table. Volume tables are needed because the shapes of stems, particularly their taper, vary by species and location.

In Southern Forest Experiment Station Research Papers SO-32 and SO-39, Glendon W. Smalley and David R. Bower present volume tables for loblolly and shortleaf pine plantations on abandoned fields in the Tennessee, Alabama, and Georgia highlands. These pines have been planted on more than a third of a million such acres, and more fields are planted every year. The tables will be useful in growth and yield studies, forest inventories, timber sales, and management plans.

Volumes are given in cubic feet, both inside and outside bark, to minimum diameters of 0, 2, 3, and 4 inches at the tops of stems. For those who cruise timber by point sampling, tables are presented to convert basal areas per acre into cubic feet per acre.

Copies of the research papers are available from the Southern Station in New Orleans.

Range Reading

A bibliography of 650 references on southern range management has been published by the Southern Forest Experiment Station. References are classified by subject matter, and there is an index of authors.

Picking up where an earlier bibliography left off, the new publication covers the period from 1962 through 1967. It lists important publications relating to rangelands of the South, domestic livestock and wildlife produced on these lands, and the management of the lands, livestock, and wildlife.

Compilers considered that the southern range area extends from Virginia westward to eastern Oklahoma and southward to Florida and eastern Texas; it includes southern portions of Kentucky and Missouri. They listed books, articles in periodicals, publications by the U. S. Government, State agricultural stations, releases of regional organizations and private foundations, and abstracted bibliographies. In making selections they considered interests of land managers, administrators, stockmen, conservationists, scientists, teachers, and students.

To receive a copy ask for Research Paper SO-38.

Fabrication Experiment: To Stick Or Not To Stick



These 1,152 pieces of 3-ply loblolly pine plywood were glued together 4 years ago in 576 different combinations of wood and glue and exposed to the weather at the Alexandria Forestry Center. The rate at which they delaminate is being checked with relation to eight factors: time exposed, specific

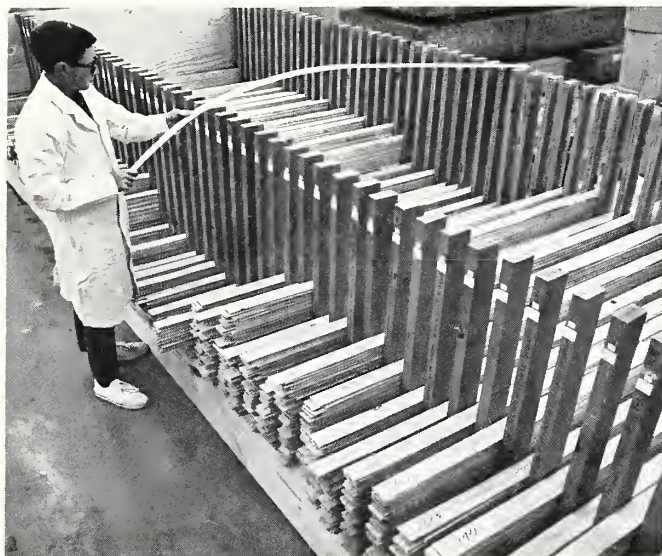
gravity of the wood, rings per inch, method of peeling the veneer, resin level in the phenol-formaldehyde glue, kind of extender, gluespread, and assembly time. Veneers from southern pine sapwood are very permeable and typically contain wide bands of latewood and earlywood. With phenol-formalde-

hyde adhesives the gluability of latewood is distinctly different from the gluability of earlywood. This difference creates difficulty in controlling gluebond quality in southern pine

plywood. An article in the December 1968 issue of *Forest Products Journal*, entitled "Gluability of Southern Pine Earlywood and Latewood," by Chung Y. Hse, researcher at the South-

ern Station's Alexandria Forestry Center, discusses in detail what is being done to resolve this problem. Copies are available from Southern Station headquarters in New Orleans.

Building Stronger Beams



These loblolly pine veneers were cut to uniform width from log-run dry veneer 1/6-inch in thickness. Stiffness—a quality related to strength—was evaluated in each by measuring the time required for sound to travel from end to end. Some were more than four times as stiff as others. Then the veneers were assembled into laminated beams by placing the stiffest outermost and the most limber in the center. When the beams were tested they proved to be very strong and stiff, and also very uniform in these properties. Three such beams can carry as much load as four conventional beams of the same size. The system of arranging laminae in order of stiffness was developed by Dr. Peter Koch at the Southern Forest Ex-

periment Station's Alexandria Forestry Center. These strong beams may be able to compete effectively against steel bar joists in light commercial construction, Dr. Koch believes. Suitable veneer strips might be salvaged at low cost from plywood plant residues. Because the laminae are butt-jointed, the system eliminates the expensive step of making scarf or finger joints. Photo at right shows a section of a beam made from these veneers. An article in the October 1968 issue of *Forest Products Journal*, entitled "Laminating Butt-Jointed, Log-Run Southern Pine Veneers into Long Beams of Uniform High Strength," describes the procedure in detail. Copies are available from the Southern Station.

Making It Work

If the proof of the pudding is in the eating, then the proof of direct-seeding will be in the harvest. Since the direct-seeding technique was developed in 1957, large-scale operations have shown it to be a fast, reliable, economical means of regenerating southern pines on diverse sites.

During the past 10 years about 1 million acres have been seeded in the South. Operations have been consistently successful on a broad variety of sites. Research, reinforced and extended by practical experience, has made it possible to direct-seed southern pines of all spe-

cies. When recommendations are closely followed, the technique is as reliable as planting.

Though the idea of direct-seeding is very old, it became practical only in the mid-50's after Southern Forest Experiment Station researchers at Alexandria, Louisiana, found a chemical repellent for coating seeds. Before that, seed-eating birds, aided by small mammals and insects, had doomed most attempts. A problem remains in preventing clipping of newly germinated seedlings near the groundline. Rabbits are usually chief culprits, but insects are also guilty. Researchers believe that an effective systemic repellent could lead to substantial reductions in sowing rates, since losses by clipping may amount to 25 percent or more.

Loblolly, slash, and longleaf pines have been sown extensively on open, cutover land in the Lower Coastal Plain. Here a dense grass often competes with young pines the first year or two if not controlled by disking. Sites dominated by low-grade hardwoods have been surest and most economical to seed, largely because grass is sparse under the trees. Disking is unnecessary, but a burn is often required to destroy accumulated leaves that keep seeds from reaching mineral soil. Except for longleaf, which has a stemless stage for 3 to 5 years, young pines grow fast enough to overtop hardwood sprouts. But the hardwoods must be killed to insure high survival and rapid growth of the pines. Size and number of

the hardwoods usually govern timing of the control operations.

In the November 1968 *Journal of Forestry* William F. Mann, Jr., principal silviculturist at the Alexandria Forestry Center, describes 10 years' experience with direct-seeding in the South. He tells of the sometimes imaginative ways in which southern foresters have adapted direct-seeding to a wide variety of sites, some of them almost impossible to plant economically. From experience and research, much of it his own, he gives specific suggestions for developing practical programs for direct-seeding.

Reprints of the article are available.

Grading Systems Approved

Simplified, well-documented systems for grading southern pine logs and trees for yard and structural lumber have been approved by the National Log Grade Committee and Chief of the Forest Service, USDA. Culminating several decades of research, the systems make significant changes in the interim grading system of 1953, and will serve as a basis for local modifications by many industrial operations.

This is the first time a tree grading system has been approved by the Forest Service. Based on lumber outturn, it is designed to replace log-by-log grading, which has sometimes met with disfavor for two reasons—it is time consuming, and

gains in accuracy over tree grading are open to question. The system applies to loblolly, shortleaf, pond, longleaf, and slash pine trees that will be sawed into standard yard and structural lumber.

Under the new system a tree is graded on the external characteristics of the butt 16-foot log. The number of clear faces, together with the amount of sweep or rot, determines the tree grade. To be considered under these rules, trees must have a minimum diameter at breast height of 9.6 inches and a minimum merchantable height of two 16-foot logs.

Details of the new log and tree grading systems may be found in reports published by the Southeastern Forest Experiment Station: USDA Forest Service Research Paper SE-39, "Southern Pine Log Grades for Yard and Structural Lumber," and Research Paper SE-40, "Southern Pine Tree Grades for Yard and Structural Lumber." Copies are available from the Southeastern Station, P. O. Box 2570, Asheville, North Carolina, 28802.

Additional publications offer supporting information about overruns and lumber width distributions, and the effects of drying, surfacing, and trimming on grade and volume of southern pine lumber. They are USDA Forest Service Research Paper SE-41 and USDA Forest Service Research Note SE-93, also available from the Southeastern Station.